

**PATENT APPLICATION**

**SHADE DEVICE**

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## **[001] SHADE DEVICE**

### **[002] Cross Reference to Related Applications**

**[003]** None

### **[004] Field of the Invention**

**[005]** The present invention relates to furnitures and devices that provide shade to people. More particularly, the invention relates to furnitures that offer shade and that have accessories, which provide comfort, entertainment, or convenience to the users and the people positioned substantially adjacent to them.

### **[006] Background**

**[007]** Beautiful, sunny days lure people to spend time outdoors. However, people can only spend a limited amount of time outdoors because of the power of the sun, which can cause sunburn or heat exhaustion. A common way to seek shelter from the sun is with an umbrella. Umbrellas can either be handheld or stationary, such as those used along with patio furnitures.

**[008]** Many accessories to umbrellas that are designed for use with patio furnitures have been conceived. However, the applicant believes that more can be done with these umbrellas. To illustrate, U.S. patent number 5,273,062 issued to Mozdzanowski discloses an umbrella with a fan and a radio. An umbrella with more convenience and entertainment features is desired. Another umbrella is disclosed in U.S. Patent number 6,199,570 issued to Patarra, which has a

container for picnic items. One problem with the container in Patarra is that the container cannot continuously be cooled. An umbrella with a cooler is desired.

[009] Umbrellas for use with patio furnitures have further been combined with misting devices. Misting devices spray water into the air to reduce the temperature within the vicinity of said furnitures. Umbrellas with misting devices may be found in U.S. patent number 6,017,188 issued to Benton, U.S. Patent number 5,000,384 issued to Arnold, U.S. Patent number 5,979,793 issued to Louis, and U.S. Patent Nos. 6,298,866 issued to Molnar. The applicant, however, believes that more features can be added to these umbrellas to offer more convenience, entertainment, or comfort to the users or to the people positioned substantially adjacent to them.

## [010] SUMMARY

### [011] Brief Description

[012] The present invention includes a shade device. The shade device may have an audiovisual media and a power source that powers the audiovisual media. The audiovisual media may be positioned under a covering of the shade device to provide entertainment to the user.

[013] The shade device may further have a liquid source and a sprayer. The sprayer is preferably configured to obtain liquid from the liquid source and spray the liquid to cool the temperature surrounding the user. The shade device may further include sprayer switch and a switch actuator that allow the user to control the amount of liquid sprayed by the sprayer. In certain embodiments, the shade device may include a container for the user to store food or beverage. The container may be cooled by the liquid from the liquid source.

[014] The above description sets forth, rather broadly, a summary of the preferred embodiments of the present invention so that the detailed description that follows may be better understood and contributions of the present invention to the art may be better appreciated. Some of the embodiments of the present invention may not include all of the features or characteristics listed in the above summary. There are, of course, additional features of the invention that will be described below and will form the subject matter of claims.

[015] In this respect, before explaining at least one preferred embodiment of the invention in detail, it is to be understood that the invention is not limited in its application to the details of the construction and to the arrangement of the components set forth in the following description or as illustrated in the drawings. The invention is capable of other embodiments and of being practiced and carried out in various ways. Also, it is to be understood that the phraseology and

terminology employed herein are for the purpose of description and should not be regarded as limiting.

## **[016] BRIEF DESCRIPTION OF THE DRAWINGS**

[017] In the drawings, like elements are depicted by like reference numerals. The drawings are briefly described as follows.

[018] Figure 1 is substantially a perspective view illustrating a preferred embodiment of the shade of the present invention.

[019] Figure 2 is substantially a front view of the base of the shade with parts broken away to show the preferred embodiment of the reservoir and the conduit of the present invention.

[020] Figure 3 is substantially a side view of the base of the shade with parts broken away, to show the preferred embodiment of the cooler compartment of the present invention.

[021] Figure 4 is substantially a diagrammatic perspective view of a further embodiment of the invention, having an entertainment unit attached to the shaft, and illustrating ventilating fans preferably located within the base.

[022] Figure 5 is substantially a perspective view of the preferred embodiment of the shade with parts broken away to show the power hub mounted concentrically upon the shaft.

[023] Figure 6 is substantially a bottom plan view of the power hub, illustrating vents and lights located thereat, as well as storage batteries, fuel cells, and the interconnection between the fuel cells and the central conduit located within the power hub.

[024] Figure 7 is substantially a block diagram, illustrating the interconnection of various functional components of the preferred embodiment of the shade of the present invention.

[025] Figure 8 is substantially a perspective view illustrating another embodiment of the shade of the present invention.

[026] Figure 9 is substantially a perspective view illustrating yet another embodiment of the shade of the present invention.

[027] Figure 10 is substantially a top plan view of the covering of the embodiment shown in figure 9, showing the ribs separating the covering into a plurality of sections and providing structural support to the covering.

## **[028] DETAILED DESCRIPTION**

**[029]** In the following detailed description of the preferred embodiments, reference is made to the accompanying drawings, which form a part of this application. The drawings show, by way of illustration, specific embodiments in which the invention may be practiced. It is to be understood that other embodiments may be utilized and structural changes may be made without departing from the scope of the present invention.

**[030]** FIG 1 illustrates a shade device 10 according to the present invention. In the preferred embodiment, the shade device 10 has a covering 14, a base 12, a shaft 16, a table 11, and a remote control 18. The covering 14, base 12, and shaft 16 are preferably made of molded high-quality plastic. In other embodiments, they may be made of other polymers or other materials known in the art.

**[031]** The covering 14 preferably includes a plurality of panels 30. Each panel 30 preferably has a top 30T. A plurality of solar cells 32 may be positioned on the top 30T of the panels 30. The solar cells 32 are preferably photovoltaic elements that are capable of generating DC electricity upon exposure to light by virtue of the photoelectric effect. The covering 14 may also have a perimeter skirt 14S, which may be made of vinyl, cloth, or other polymers known in the art. A plurality of sprayers 34 may be positioned on the perimeter skirt 14S for spraying liquid, such as cool water, thereby creating a mist. Preferably, four sprayers 34 are provided and are positioned substantially ninety degrees apart on the perimeter skirt 14s. Of course, the sprayers may be positioned in a variety of ways. The sprayers may also be made of nozzles known in the art and preferably adjustable nozzles.



[032] Attached to the covering 14 is the shaft 16. The shaft 16 preferably extends vertically between the covering 14 and the base 12. The shaft 16 preferably has an upper end 16U near the covering 14 and a lower end 16L that is preferably near the base 12. Attached to the lower end 16L of the shaft 16 is a base 12. The base 12 preferably has a bottom 12B and a base sidewall 12S. The base 12 preferably has a plurality of wheels 50, such as castor wheels, which forms part of a mobility unit that provides mobility to the shade 10. The plurality of wheels 50 may be attached to a motor (not shown), which may be connected to or in communication with the remote control 18. In general, the shade 10 is preferably configured to be movable by the user to control the area and degree of shade. It is noted that in the preferred embodiment, for aesthetic purposes, the base sidewall 12S substantially covers the plurality of wheels 50 to discreetly show the wheels 50. A plurality of intake ports 52 may be positioned on the base 12 for allowing an air current through the air vents, as will be described in further detail hereinafter.

[033] The base 12 may have a plurality of air vents 40 for providing a cooled air current to the user. The air vents 40 are preferably positioned at a height consistent with that of a standard lounge chair, so that they are located in a position suitable for cooling occupants seated on the lounge chairs and positioned alongside the shade 10. A plurality of sprayers 42 may also be positioned on the base 12. The sprayers 42 may be useful for cooling the person sitting near or under the covering 14.

[034] A table 11 may be added to the shade 10. The table 11 may have a flat top surface to support any item placed thereon. The table 11 is preferably removeably mounted to the shaft 16 in a manner known in the art. The table 11 may be mounted using fasteners known in the art, such as screws. Alternatively, the shaft 16 may define a receiving slot (not shown) that may receive and support a part of the table 11.

[035] A remote control 18 may be added and programmed to give control to a user over the functionality of the shade 10, as will be described in detail. The remote control 18 may allow the user to control the sprayers 34, the sprayers 42, the fan (not shown) within the base, illuminating lights (not shown), audiovisual device (not shown), and the motor (not shown) operating the wheels 50. The remote control 18 may also allow the user to control the tilt of the covering 14 so that the covering 14 can effectively be positioned to block the sun.

[036] Referring now to figure 2, a portion of the base 12 has been illustratively broken away to reveal a reservoir 54 located therein. The reservoir 54 is preferably configured to store coolant 53, such as a combination of ice and chilled water. The coolant may be various types of coolant known in the art and is preferably a coolant type capable of generating mist through the sprayers 34 or the sprayers 42 and capable of cooling the temperature of a cooler, which is shown in figure 3. The reservoir 54 preferably has a volume sufficient for holding a large quantity of coolant. The reservoir 54 may be filled with coolant via a fill port 13, which is an opening preferably defined by a portion of the base 12.

[037] Drain ports (not shown) may be provided. In addition, a coolant level sensor may be provided within the reservoir 54 to selectively illuminate at least one light (not shown) that may be mounted on the shaft 16 or on the base 12 to inform the user that coolant must be refilled. It can be appreciated that the use of the reservoir 54 eliminates the need for heavy and expensive traditional refrigeration equipment, such as a compressor, evaporator, and condenser.

[038] With continued reference to figure 2, a central conduit 46 may be placed within the reservoir 54. The central conduit 46 preferably has an inlet 46A at an end that is located within the reservoir 54. The central conduit 46 is preferably configured to carry the coolant 53 upwards

from the reservoir 54 through the shaft 16. The coolant 53 may then be sprayed through the sprayers 34 positioned around the covering 14.

[039] Referring back to figure 1, it can be appreciated that intake ports 52 allow air to enter. Air flows into the intake ports 52 and through the reservoir 54 (fig. 3) and conduit 46, which influence the temperature of the air. Cooled air then exits through the air vents 40 and may cool the user (not shown). Manual controls 22 may be positioned on the base 12. The manual controls 22 may be provided in lieu of or in addition to the remote control 18. The manual controls may allow a user to control the functionality of the shade 10, including misting, lights, ventilation, audiovisual device operation, positioning of the covering 14, and operation of the wheels 50 to move the shade 10. In the preferred embodiment, two sets of manual controls 22 may be located on the wall of the base 12 preferably fully opposite from each other. This is particularly useful when the shade is positioned between two users. Accordingly, each user can have direct control over the functionality of the portion of the shade that is adjacent to them.

[040] Referring now to figure 3, each side of the base 12 preferably has a cooler compartment 56. Each cooler compartment 56 preferably has an insulated access door 57 and interior walls 58 that are fluidically sealed from, yet are in thermal communication with, the reservoir 54. Beverages 60 may be placed within each cooler compartment 56 to be kept cool, and heat is prevented from infiltrating the cooler compartments. Various items may be placed within the cooler for cooling, such as beverages and food. It is noted that the access door 57 may be slidable or hingably connected to the base 12. It is further noted that each cooler compartment 56 is preferably removeable from the base 12 so that the interior walls 58 may be cleaned. The material for the cooler compartment 56 preferably has the characteristic of being able to provide good insulation, dishwasher-safe, and easy to clean.

[041] Referring now to figure 4, figure 4 illustrates an entertainment unit 70 preferably attached to the shaft 16 of the shade 10. It is noted that entertainment unit 70 may be attached at different areas of the shade 10. The entertainment unit 70 is preferably attached to the shaft 16 by an adjustable arm 72 that allows the entertainment unit to be positioned according to the needs of the user. The shade 10 may have an entertainment unit arm mount 74 on the shaft wall 16W above the table 11. The arm mount provides structural stability for the entertainment unit 70 and may be used to convey power and cable or airborne signals to the entertainment unit 70 through the adjustable arm 72. In this regard, one or more antennas may be mounted on the covering 14. The entertainment unit 70 preferably has a media slot 71, which selectively allows compact discs (CDs), digital video discs (DVDs), cassette tapes, video cassettes, or other audio or visual media to be inserted therein by the user to listen to or view the same. The entertainment unit 70 may also be in a form of a computer or a combination of a television (TV) and a videocassette recorder (VCR), a TV and a DVD player, a TV and a video game controller, such as a Sony Playstation, or a TV and a karaoke machine. The TV screen may be a plasma screen, a cathode ray tube, or a liquid crystal display. The entertainment unit 70 may include speakers (not shown) and headphones (not shown). The headphones may be wireless or be a traditional headphone with wires.

[042] With continued reference to figure 4, a pump 80 is preferably connected to central conduit 46 to deliver the coolant 53 from the base 12 to the covering 14, where the coolant is distributed by the sprayers 34. Additionally, a plurality of fans 82 may be located within the base 12 and preferably below the vents 40. It is noted that the speed of the fans 82 are preferably variable. For example, the speed may be adjustable within 3 levels-high, medium, and low. The fans 82 are preferably connected to a control unit 100 (fig. 7) so that the operation of the fans 82

and their speed levels may be controlled by either manual controls 22 (fig. 1) or the remote control 18.

[043] Referring now to figure 5, a portion of the covering 14 is illustratively broken away to reveal a power hub 90 located near the upper end 16U of the shaft 16. The hub 90 is preferably substantially disk-like, and is mounted concentrically upon the shaft 16. It is preferably located high upon the shaft 16, so that it is at least above the covering perimeter skirt 14S and is partially concealed from view.

[044] With reference to figure 6, the power hub 90 preferably has a bottom surface 90B that has a plurality of hub vents 92. The power hub 92 preferably has substantially hollow interior that is in communication with the shaft 16. Accordingly, air currents from the fans 82 (fig. 4) are expelled in part through the hub vents 92. In other embodiments, additional fans may be added around the conduit 46 to allow more air to exit through the vents. Like the vents 40 on the base 12, the hub vents 92 are louvered to allow directional control of the air vents. Preferably, however, the hub vents 92 are configured to direct the air current substantially downward, as the power hub 90 is preferably positioned above the users. Hub lights 95 may also be provided on the power hub bottom surface 90B to illuminate the area beneath.

[045] Within the power hub 90 are preferably a plurality of rechargeable storage batteries 94. The rechargeable storage batteries 94 are preferably in communication with the solar cells 32 (fig. 1), such that the solar cells 32 recharge the storage batteries 94 when sufficient light is incident upon the storage cells 32. Fuel cell technology may be employed to provide a more consistent source of power. In this regard, a plurality of micro fuel cells 96 may be provided. The micro fuel cells 96 create electricity as a byproduct of a chemical reaction. For example, hydrogen and oxygen may be used to power a fuel cell.

[046] Alternatively, fuel cells may use propane or natural gas. The micro fuel cells 96 may further employ gas tanks 97 to produce electricity from a fuel of methanol. In addition, since one typical byproduct of the chemical reaction is water, the fuel cells may each have a water drain tube 98 to direct such water through the central conduit 46 and to the reservoir.

[047] Referring now to figure 7, a block diagram that describes the interconnection of the various components of the preferred embodiment of the shade 10 is shown. The shade is preferably powered by the rechargeable batteries 94, which are selectively charged by the micro fuel cells 96 and solar cells 32. Micro fuel cells 96 and solar cells 32 are preferably connected to a control unit, such as a computer, which controls the functionality of the shade 10 including the distribution of the stored power. The control unit 100 may be instructed by the user either by using the manual control 22 or the remote control 18. For instance, if the user wishes to turn any lights (fig. 9) on or off, operate the mobility unit 102 to move the shade, initiate ventilation by activating the fans 80, or control the entertainment unit 70, the user may conveniently use the remote control unit 100 while remaining comfortably reclined in a lounge chair.

[048] The control unit 100 preferably selectively operates the fans 82, the pump 80, the lights, the entertainment unit 70, and the mobility unit 102, which is used to physically move or reorient the whole shade 10. It is noted that pivots, joints, or swivels known in the art may be inserted to the shaft 16 (not shown in figure 7) to allow the covering 14 to be tilted or positioned in a way that effectively blocks the sun.

[049] As further illustrated in figure 7, the control unit 100 may be connected to a sprayer switch 71. Sprayer switch 71 may further be connected to a sprayer actuator 73 (not shown). Sprayer actuator 73 may include a piston (not shown) and a spring (not shown) housed in a cylinder (not shown). Sprayer actuator 73 may further include a motor and gears configured to

work with pump 80 to drive water from the reservoir 54. When the sprayer switch 71 is activated, the switch preferably activates the actuator 73. The actuator 73 causes the volume within the conduit 46 to shrink and expand, which consequently causes the pump 80 to deliver the liquid from the reservoir 54 to the sprayers 34. It can thus be appreciated that the sprayers 34 of certain embodiments of the present invention can be controlled by the user to deliver the desired amount of mist and for a particular period of time. The sprayers 34 may further be individually controlled-that is, the shade device 10 may allow each user to control his or her sprayer either through manual control 22 or a remote control 18. A timer 75 may be provided to control the operation of the sprayers 34 and 42 based on a particular time or time interval.

[050] With reference now to figure 8, another embodiment of a shade 102 of the present invention is shown. Shade 102 is preferably substantially similar to shade 10 previously discussed except that sprayers 104A-G are mounted to a rod 106, which is connected to conduit 46 (fig. 2). Sprayers 104A-G spray liquid, which comes from the reservoir 54 and which is delivered to the sprayers 104A-G by the pump 80 (fig. 4) through the conduit 46 (fig. 2). Another additional feature of shade 102 is the fans 108 A and B, which are also attached to the rod 106. In combination with the sprayers 104A-G, fans 108A and B help further cool the users' surrounding environment. Fans 108A and B are preferably collapsible or removeable so that they can be stored discreetly for aesthetic purposes. The base of shade 102 is noticeably smaller and houses fewer components than the base of shade 10.

[051] With reference now to figure 9, another embodiment of a shade 110 of the present invention is shown. Shade 110 is preferably substantially similar to shade 10 previously discussed except that shade 110 includes lights 112A-D mounted to the hub 90. Lights 112A-D may be recessed lights or other types known in the art. Additional sprayers 114 A-C may be

provided. The base of shade 110 is noticeably smaller and houses fewer components than the base of shade 10.

[052] Referring now to figure 10, shade devices 10 and 110 may include a plurality of ribs 116 that separate the covering 14 into a plurality of sections and that provide structural support to the covering.

[053] It can now be realized that the various embodiments of the shade device of the present invention has more features that provide comfort, convenience, or entertainment than the existing devices. Certain embodiments provide a shade device that provides readily available audiovisual source of entertainment that may have readily available source of power and thus can be operated anywhere. Certain embodiments provide a highly convenient source of beverage or food, which may continuously be chilled. Certain embodiments provide a controllable misting system with individually controllable sprayers. Yet certain embodiments provide a highly moveable and adjustable shade that can be positioned to effectively block the sun.

[054] Although the description above contains many specifications, these should not be construed as limiting the scope of the invention but as merely providing illustrations of some of presently preferred embodiments of this invention. For example, the number of solar panels, the shape of the covering, and the spatial orientation of the sprayers, the lights, air vents, the audiovisual device, and other components may be varied. Thus, the scope of the invention should be determined by the appended claims and their legal equivalents rather than by the examples given.